

LISTING OF CLAIMS:

- $$\begin{array}{c}
 \begin{array}{c}
 \text{R}^1 \quad \text{R}^2 \\
 \diagdown \quad \diagup \\
 \text{---} \text{C} \quad \text{C} \text{---} \\
 \diagup \quad \diagdown \\
 \text{R}^4 \quad \text{R}^3\text{O}
 \end{array}
 \quad
 \begin{array}{c}
 \text{---} \text{C} \text{---} \\
 \diagup \quad \diagdown \\
 \text{O} \\
 \diagdown \quad \diagup \\
 \text{---} \text{C} \text{---} \\
 \diagup \quad \diagdown \\
 \text{O} \\
 \diagdown \quad \diagup \\
 \text{---} \text{C} \text{---} \\
 \diagup \quad \diagdown \\
 \text{R}^5 \quad \text{R}^6 \quad \text{R}^7 \quad \text{R}^8
 \end{array}
 \quad
 \begin{array}{c}
 \text{R}^9 \quad \text{R}^{10} \\
 \diagdown \quad \diagup \\
 \text{---} \text{C} \quad \text{C} \text{---} \\
 \diagup \quad \diagdown \\
 \text{R}^{14} \quad \text{R}^{11} \quad \text{R}^{12} \quad \text{O} \quad \text{R}^{13}
 \end{array}
 \quad
 \begin{array}{c}
 \text{R}^{16} \quad \text{R}^{15} \\
 \diagdown \quad \diagup \\
 \text{---} \text{C} \quad \text{C} \text{---} \\
 \diagup \quad \diagdown \\
 \text{H} \quad \text{R}^{18}\text{O} \quad \text{C}=\text{O}
 \end{array}
 \quad
 \begin{array}{c}
 \text{R}^{16'} \quad \text{R}^{15'} \\
 \diagdown \quad \diagup \\
 \text{---} \text{C} \quad \text{C} \text{---} \\
 \diagup \quad \diagdown \\
 \text{H} \quad \text{R}^{19}\text{O} \quad \text{C}=\text{O}
 \end{array}
 \quad
 \begin{array}{c}
 \text{R}^{16''} \quad \text{R}^{15''} \\
 \diagdown \quad \diagup \\
 \text{---} \text{C} \quad \text{C} \text{---} \\
 \diagup \quad \diagdown \\
 \text{H} \quad \text{R}^{20}\text{O} \quad \text{C}=\text{O}
 \end{array}
 \quad
 \begin{array}{c}
 \text{R}^{16'''} \quad \text{R}^{15'''} \\
 \diagdown \quad \diagup \\
 \text{---} \text{C} \quad \text{C} \text{---} \\
 \diagup \quad \diagdown \\
 \text{H} \quad \text{R}^{21}\text{O} \quad \text{C}=\text{O}
 \end{array}
 \end{array}
 \quad (1)$$

R³ and R⁴ each are hydrogen or a straight, branched or cyclic, monovalent hydrocarbon group of 1 to 15 carbon atoms which may contain a hetero atom, and R³ and R⁴ may bond together to form a ring, wherein R³ and R⁴ together represent a straight, branched or cyclic, divalent hydrocarbon group of 1 to 15 carbon atoms which may contain a hetero atom.

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ring, wherein the ring forming two R's together represent a straight, branched or cyclic, divalent hydrocarbon group of 1 to 15 carbon atoms which may contain a hetero atom,

R^9 and R^{10} each are hydrogen or methyl,

each of R^{11} to R^{14} is hydrogen or a straight, branched or cyclic, monovalent hydrocarbon group of 1 to 15 carbon atoms which may contain a hetero atom, a pair of R^{11} and R^{12} , a pair of R^{11} or R^{12} and R^{13} , a pair of R^{11} or R^{12} and R^{14} , or a pair of R^{13} and R^{14} may bond together to form a ring, wherein each pair represents a straight, branched or cyclic, divalent hydrocarbon group of 1 to 15 carbon atoms which may contain a hetero atom,

R^{15} is hydrogen, methyl or $CH_2CO_2R^{17}$,

$R^{15'}$ is hydrogen, methyl or $CH_2CO_2R^{17'}$,

$R^{15''}$ is hydrogen, methyl or $CH_2CO_2R^{17''}$,

$R^{15'''}$ is hydrogen, methyl or $CH_2CO_2R^{17'''}$,

R^{16} is hydrogen, methyl or CO_2R^{17} ,

$R^{16'}$ is hydrogen, methyl or $CO_2R^{17'}$,

$R^{16''}$ is hydrogen, methyl or $CO_2R^{17''}$,

$R^{16'''}$ is hydrogen, methyl or $CO_2R^{17'''}$,

R^{17} , $R^{17'}$, $R^{17''}$ and $R^{17'''}$ may be identical or different between R^{15} and R^{16} , between $R^{15'}$ and $R^{16'}$, between $R^{15''}$ and $R^{16''}$ and between $R^{15'''}$ and $R^{16'''}$, respectively, and each is a straight, branched or cyclic alkyl group of 1 to 15 carbon atoms,

R^{18} is hydrogen or a monovalent hydrocarbon group of 1 to 15 carbon atoms containing a carboxyl or hydroxyl group,

R^{19} is a monovalent hydrocarbon group of 2 to 15 carbon atoms containing at least one partial structure selected from the group consisting of ether, aldehyde, ketone, ester, carbonate, acid anhydride, amide and imide,

R^{20} is a polycyclic hydrocarbon group of 7 to 15 carbon atoms or an alkyl group containing a polycyclic hydrocarbon group,

R^{21} is an acid labile group,

k is 0 or 1,

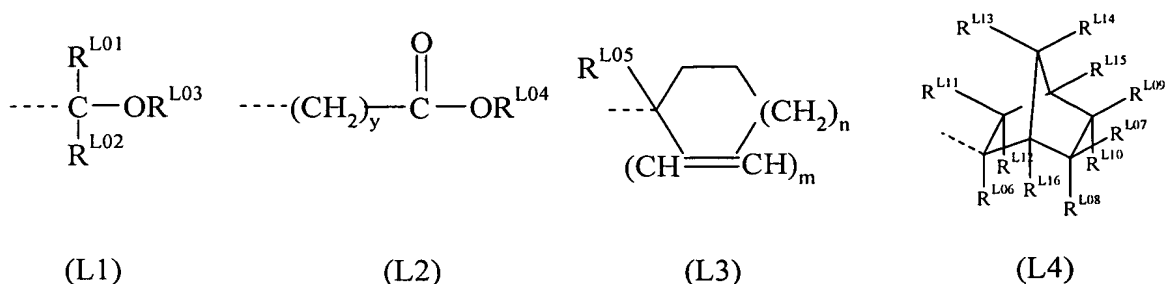
x_1 , x_2 , x_3 , a, b, c and d represent a molar compositional ratio of the recurring units associated therewith, satisfying $x_1+x_2+x_3+a+b+c+d = 1$, x_1 , x_2 , x_3 , a, b and c are numbers inclusive of 0, d is a number of more than 0, provided that at least two of x_1 , x_2 and x_3 are not equal to 0.

2. **(Canceled)**

3. **(Original)** A resist composition comprising the polymer of claim 1.

4. **(Original)** A process for forming a resist pattern comprising the steps of:
applying the resist composition of claim 3 onto a substrate to form a coating,
heat treating the coating and then exposing it to high-energy radiation or electron beam through a photo mask, and
optionally heat treating the exposed coating and developing it with a developer.

5. **(Previously presented)** The polymer of claim 1 wherein the acid labile group represented by R^{21} is an acid labile group selected from the group consisting of groups of the following general formulae (L1) to (L4):



wherein the broken line denotes a free valence bond, R^{L01} and R^{L02} are hydrogen or straight, branched or cyclic alkyl groups of 1 to 18 carbon atoms, R^{L03} is a monovalent hydrocarbon group of 1 to 18 carbon atoms which may contain a hetero atom, a pair of R^{L01} and R^{L02} , R^{L01} and R^{L03} , or R^{L02} and R^{L03} may form a ring, wherein each of R^{L01} , R^{L02} and R^{L03} is a straight or branched alkylene group of 1 to 18 carbon atoms when they form a ring,

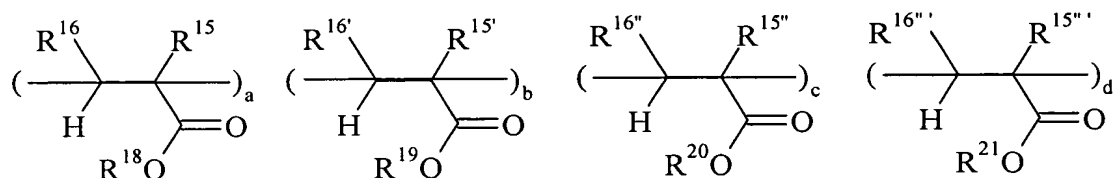
R^{L04} is a tertiary alkyl group of 4 to 20 carbon atoms, a trialkylsilyl group in which each alkyl moiety has 1 to 6 carbon atoms, an oxoalkyl group of 4 to 20 carbon atoms, or a group of formula (L1),

R^{L05} is a monovalent hydrocarbon group of 1 to 8 carbon atoms which may contain a hetero atom or a substituted or unsubstituted aryl group of 6 to 20 carbon atoms,

R^{L06} is a monovalent hydrocarbon group of 1 to 8 carbon atoms which may contain a hetero atom or a substituted or unsubstituted aryl group of 6 to 20 carbon atoms, and

R^{L07} to R^{L16} independently represent hydrogen or monovalent hydrocarbon groups of 1 to 15 carbon atoms which may contain a hetero atom, or R^{L07} to R^{L16} , taken together, form a ring, wherein each of R^{L07} to R^{L16} represents a divalent C_1 - C_{15} hydrocarbon group which may contain a hetero atom, when they form a ring, or two of R^{L07} to R^{L16} which are attached to adjoining carbon atoms may bond together directly to form a double bond.

6. (Currently Amended) A polymer comprising recurring units of the following general formula (1a) and having a weight average molecular weight of 1,000 to 500,000,



wherein R¹ and R² each are hydrogen or methyl,

R³ is hydrogen or a straight, branched or cyclic, monovalent hydrocarbon group of 1 to 15 carbon atoms or a straight, branched or cyclic, monovalent hydrocarbon group of 3 to 15 carbon atoms which may contain a hetero atom; and

R⁴ ~~each are~~ is hydrogen or a straight, branched or cyclic, monovalent hydrocarbon group of 1 to 15 carbon atoms which may contain a hetero atom, ~~and~~ or

R³ and R⁴ may bond together to form a ring, wherein R³ and R⁴ together represent a straight, branched or cyclic, divalent hydrocarbon group of 1 to 15 carbon atoms which may contain a hetero atom,

R¹⁵ is hydrogen, methyl or CH₂CO₂R¹⁷,

R^{15'} is hydrogen, methyl or CH₂CO₂R^{17'},

R^{15''} is hydrogen, methyl or CH₂CO₂R^{17''},

R^{15'''} is hydrogen, methyl or CH₂CO₂R^{17'''},

R¹⁶ is hydrogen, methyl or CO₂R¹⁷,

R^{16'} is hydrogen, methyl or CO₂R^{17'},

$R^{16''}$ is hydrogen, methyl or $\text{CO}_2R^{17''}$,

$R^{16'''}$ is hydrogen, methyl or $\text{CO}_2R^{17'''}$,

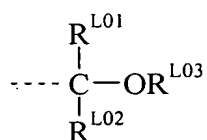
R^{17} , $R^{17'}$, $R^{17''}$ and $R^{17'''}$ may be identical or different between R^{15} and R^{16} , between $R^{15'}$ and $R^{16'}$, between $R^{15''}$ and $R^{16''}$, and between $R^{15'''}$ and $R^{16'''}$, respectively, and each is a straight, branched or cyclic alkyl group of 1 to 15 carbon atoms,

R^{18} is hydrogen or a monovalent hydrocarbon group of 1 to 15 carbon atoms containing a carboxyl or hydroxyl group,

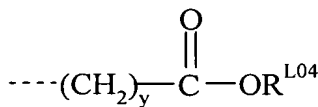
R^{19} is a monovalent hydrocarbon group of 2 to 15 carbon atoms containing at least one partial structure selected from the group consisting of ether, aldehyde, ketone, ester, carbonate, acid anhydride, amide and imide,

R^{20} is a polycyclic hydrocarbon group of 7 to 15 carbon atoms or an alkyl group containing a polycyclic hydrocarbon group,

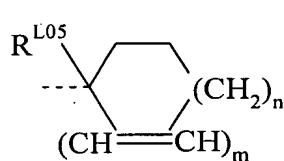
R^{21} is an acid labile group selected from the group consisting of groups of the following general formulae (L1) to (L4):



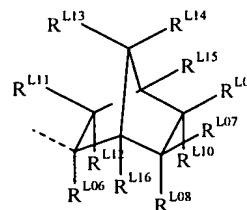
(L1)



(L2)



(L3)



(L4)

wherein the broken line denotes a free valence bond, R^{L01} and R^{L02} are hydrogen or straight, branched or cyclic alkyl groups of 1 to 18 carbon atoms, R^{L03} is a monovalent hydrocarbon group of 1 to 18 carbon atoms which may contain a hetero atom, a pair of R^{L01} and R^{L02} , R^{L01} and R^{L03} , or R^{L02} and R^{L03} may form a ring, wherein each of R^{L01} , R^{L02} and R^{L03} is a straight or branched alkylene group of 1 to 18 carbon atoms when they form a ring,

R^{L04} is a tertiary alkyl group of 4 to 20 carbon atoms, a trialkylsilyl group in which each alkyl moiety has 1 to 6 carbon atoms, an oxoalkyl group of 4 to 20 carbon atoms, or a group of formula (L1),

R^{L05} is a monovalent hydrocarbon group of 1 to 8 carbon atoms which may contain a hetero atom or a substituted or unsubstituted aryl group of 6 to 20 carbon atoms,

R^{L06} is a monovalent hydrocarbon group of 1 to 8 carbon atoms which may contain a hetero atom or a substituted or unsubstituted aryl group of 6 to 20 carbon atoms, and

R^{L07} to R^{L16} independently represent hydrogen or monovalent hydrocarbon groups of 1 to 15 carbon atoms which may contain a hetero atom, or R^{L07} to R^{L16} , taken together, form a ring, wherein each of R^{L07} to R^{L16} represents a divalent C_1 - C_{15} hydrocarbon group which may contain a hetero atom, when they form a ring, or two of R^{L01} to R^{L16} which are attached to adjoining carbon atoms may bond together directly to form a double bond,

k is 0 or 1,

xl, a, b, c and d represent a molar compositional ratio of the recurring units associated therewith, satisfying $xl+a+b+c+d = 1$, a, b and c are numbers inclusive of 0, d is a number of more than 0, xl is a number not equal to 0.

7. **(Previously presented)** A resist composition comprising the polymer of claim 6.

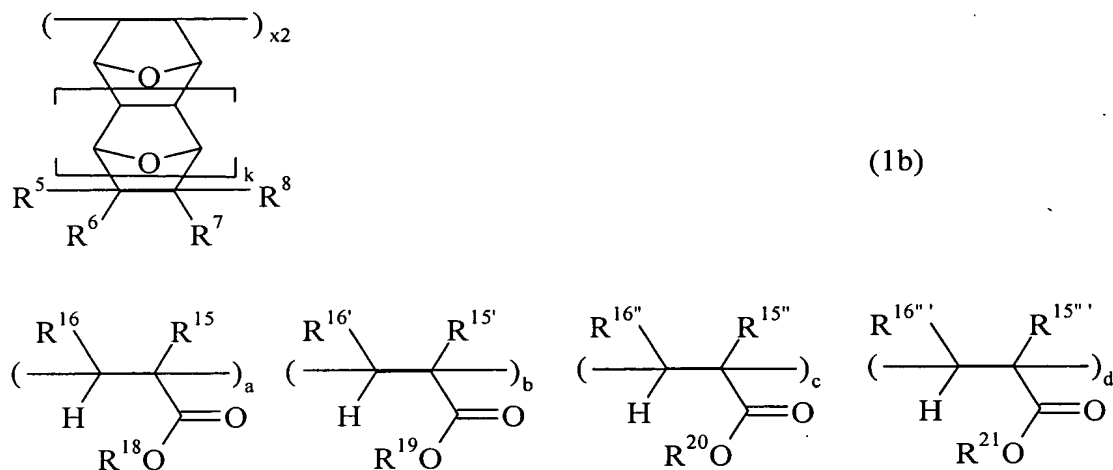
8. **(Previously presented)** A process for forming a resist pattern comprising the steps of:

applying the resist composition of claim 6 onto a substrate to form a coating,

heat treating the coating and then exposing it to high-energy radiation or electron beam through a photo mask, and

optionally heat treating the exposed coating and developing it with a developer.

9. **(Currently Amended)** A polymer comprising recurring units of the following general formula (1b) and having a weight average molecular weight of 1,000 to 500,000,



wherein each of R^5 to R^8 is hydrogen, a hydroxyl group or a straight, branched or cyclic, monovalent hydrocarbon group of 1 to 15 carbon atoms which may contain a hetero atom, at least one of R^5 to R^8 contains a hetero atom, any two of R^5 to R^8 may bond together to form a ring, wherein the ring-forming two R's together represent a straight, branched or cyclic, divalent hydrocarbon group of 1 to 15 carbon atoms which may contain a hetero atom,

R^{15} is hydrogen, methyl or $\text{CH}_2\text{CO}_2R^{17}$,

$R^{15'}$ is hydrogen, methyl or $\text{CH}_2\text{CO}_2R^{17}$,

$R^{15'}$ is hydrogen, methyl or $\text{CH}_2\text{CO}_2R^{17''}$,

$R^{15''}$ is hydrogen, methyl or $\text{CH}_2\text{CO}_2R^{17''}$,

R^{16} is hydrogen, methyl or CO_2R^{17} ,

$R^{16'}$ is hydrogen, methyl or CO_2R^{17} ,

$R^{16''}$ is hydrogen, methyl or $\text{CO}_2R^{17''}$,

$R^{16''}$ is hydrogen, methyl or $CO_2R^{17''}$,

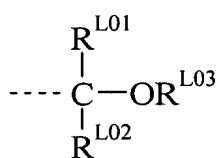
R^{17} , $R^{17'}$, $R^{17''}$ and $R^{17'''}$ may be identical or different between R^{15} and R^{16} , between $R^{15'}$ and $R^{16'}$, between $R^{15''}$ and $R^{16''}$, and between $R^{15'''}$ and $R^{16'''}$, respectively, and each is a straight, branched or cyclic alkyl group of 1 to 15 carbon atoms,

R^{18} is hydrogen or a monovalent hydrocarbon group of 1 to 15 carbon atoms containing a carboxyl or hydroxyl group,

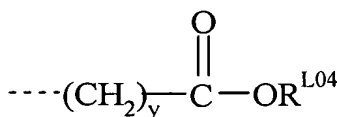
R^{19} is a monovalent hydrocarbon group of 2 to 15 carbon atoms containing at least one partial structure selected from the group consisting of ether, aldehyde, ketone, ester, carbonate, acid anhydride, amide and imide,

R^{20} is a polycyclic hydrocarbon group of 7 to 15 carbon atoms or an alkyl group containing a polycyclic hydrocarbon group,

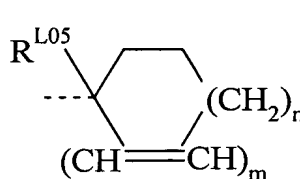
R^{21} is an acid labile group selected from the group consisting of groups of the following general formulae (L1) to (L4):



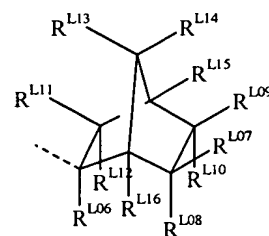
(L1)



(L2)



(L3)



(L4)

wherein the broken line denotes a free valence bond, R^{L01} and R^{L02} are hydrogen or straight, branched or cyclic alkyl groups of 1 to 18 carbon atoms, R^{L03} is a monovalent hydrocarbon group of 1 to 18 carbon atoms which may contain a hetero atom, a pair of R^{L01} and R^{L02} , R^{L01} and R^{L03} , or R^{L02} and R^{L03} may form a ring, wherein each of R^{L01} , R^{L02} and R^{L03} is a straight or branched alkylene group of 1 to 18 carbon atoms when they form a ring,

R^{L04} is a tertiary alkyl group of 4 to 20 carbon atoms, a trialkylsilyl group in which each alkyl moiety has 1 to 6 carbon atoms, an oxoalkyl group of 4 to 20 carbon atoms, or a group of formula (L1).

R^{L05} is a monovalent hydrocarbon group of 1 to 8 carbon atoms which may contain a hetero atom or a substituted or unsubstituted aryl group of 6 to 20 carbon atoms,

R^{L06} is a monovalent hydrocarbon group of 1 to 8 carbon atoms which may contain a hetero atom or a substituted or unsubstituted aryl group of 6 to 20 carbon atoms, and

R^{L07} to R^{L16} independently represent hydrogen or monovalent hydrocarbon groups of 1 to 15 carbon atoms which may contain a hetero atom, or R^{L07} to R^{L16}, taken together, form a ring,

wherein each of R^{L07} to R^{L16} represents a divalent C₁-C₁₅ hydrocarbon group which may contain a hetero atom, when they form a ring, or two of R^{L07} to R^{L16} which are attached to adjoining carbon atoms may bond together directly to form a double bond,

k is 0 or 1,

x2, a, b, c and d represent a molar compositional ratio of the recurring units associated therewith, satisfying $x2+a+b+c+d = 1$, a, b and c are numbers inclusive of 0, d is a number of more than 0, x2 is a number not equal to 0.

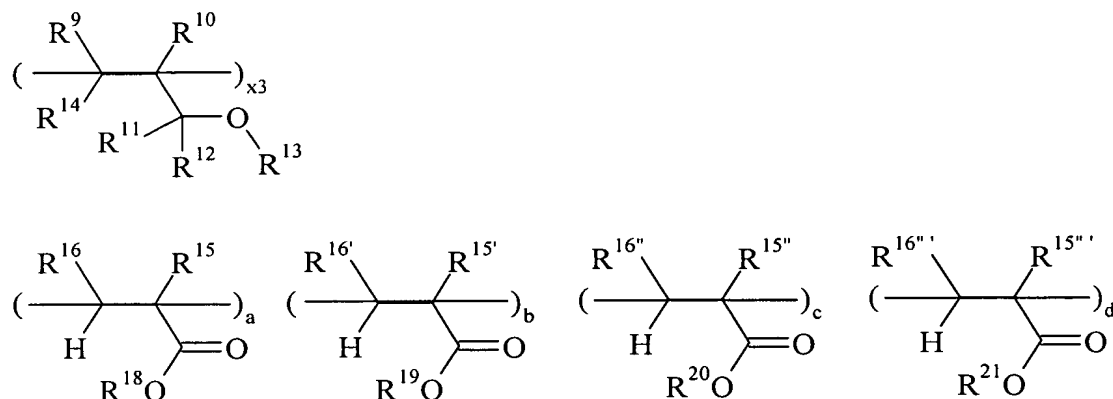
10. (Canceled)

11. (Previously presented) A resist composition comprising the polymer of claim 9.

12. **(Previously presented)** A process for forming a resist pattern comprising the steps of:

applying the resist composition of claim 9 onto a substrate to form a coating,
heat treating the coating and then exposing it to high-energy radiation or electron beam through a photo mask, and
optionally heat treating the exposed coating and developing it with a developer.

13. **(Currently Amended)** A polymer comprising recurring units of the following general formula (1c) and having a weight average molecular weight of 1,000 to 500,000,



wherein R⁹ and R¹⁰ each are hydrogen or methyl,

each of R¹¹ to R¹² is hydrogen or a straight, branched or cyclic, monovalent hydrocarbon group of 1 to 15 carbon atoms,

each of ~~R¹¹~~ R¹³ to R¹⁴ is hydrogen or a straight, branched or cyclic, monovalent hydrocarbon group of 1 to 15 carbon atoms which may contain a hetero atom, a pair of R¹¹ and R¹², a pair of R¹¹ or R¹² and R¹³, a pair of R¹¹ or R¹² and R¹⁴, or a pair of R¹³ and R¹⁴ may bond together to form a ring, wherein each pair represents a straight, branched or cyclic,

divalent hydrocarbon group of 1 to 15 carbon atoms which may contain a hetero atom,

R^{15} is hydrogen, methyl or $CH_2CO_2R^{17}$,

$R^{15'}$ is hydrogen, methyl or $CH_2CO_2R^{17'}$,

$R^{15''}$ is hydrogen, methyl or $CH_2CO_2R^{17''}$,

$R^{15'''}$ is hydrogen, methyl or $CH_2CO_2R^{17'''}$,

R^{16} is hydrogen, methyl or CO_2R^{17} ,

$R^{16'}$ is hydrogen, methyl or $CO_2R^{17'}$,

$R^{16''}$ is hydrogen, methyl or $CO_2R^{17''}$,

$R^{16'''}$ is hydrogen, methyl or $CO_2R^{17'''}$,

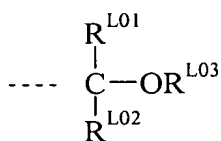
R^{17} , $R^{17'}$, $R^{17''}$ and $R^{17'''}$ may be identical or different between R^{15} and R^{16} , between $R^{15'}$ and $R^{16'}$, between $R^{15''}$ and $R^{16''}$, and between $R^{15'''}$ and $R^{16'''}$, respectively, and each is a straight, branched or cyclic alkyl group of 1 to 15 carbon atoms,

R^{18} is hydrogen or a monovalent hydrocarbon group of 1 to 15 carbon atoms containing a carboxyl or hydroxyl group,

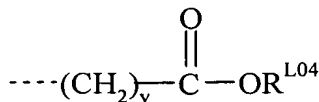
R^{19} is a monovalent hydrocarbon group of 2 to 15 carbon atoms containing at least one partial structure selected from the group consisting of ether, aldehyde, ketone, ester, carbonate, acid anhydride, amide and imide,

R^{20} is a polycyclic hydrocarbon group of 7 to 15 carbon atoms or an alkyl group containing a polycyclic hydrocarbon group,

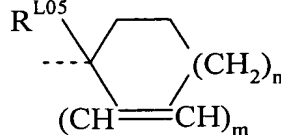
R^{21} is an acid labile group selected from the group consisting of groups of the following general formulae (L1) to (L4):



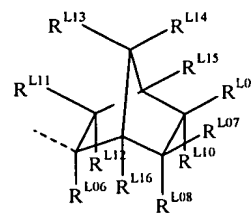
(L1)



(L2)



(L3)



(L4)

wherein the broken line denotes a free valence bond, R^{L01} and R^{L02} are hydrogen or straight, branched or cyclic alkyl groups of 1 to 18 carbon atoms, R^{L03} is a monovalent hydrocarbon group of 1 to 18 carbon atoms which may contain a hetero atom, a pair of R^{L01} and R^{L02} , R^{L01} and R^{L03} , or R^{L02} and R^{L03} may form a ring, wherein each of R^{L01} , R^{L02} and R^{L03} is a straight or branched alkylene group of 1 to 18 carbon atoms when they form a ring,

R^{L04} is a tertiary alkyl group of 4 to 20 carbon atoms, a trialkylsilyl group in which each alkyl moiety has 1 to 6 carbon atoms, an oxoalkyl group of 4 to 20 carbon atoms, or a group of formula (L1),

R^{L05} is a monovalent hydrocarbon group of 1 to 8 carbon atoms which may contain a hetero atom or a substituted or unsubstituted aryl group of 6 to 20 carbon atoms,

R^{L06} is a monovalent hydrocarbon group of 1 to 8 carbon atoms which may contain a hetero atom or a substituted or unsubstituted aryl group of 6 to 20 carbon atoms, and

R^{L07} to R^{L16} independently represent hydrogen or monovalent hydrocarbon groups of 1 to 15 carbon atoms which may contain a hetero atom, or R^{L07} to R^{L16} , taken together, form a ring, wherein each of R^{L07} to R^{L16} represents a divalent C_1 - C_{15} , hydrocarbon group which may contain a hetero atom, when they form a ring, or two of R^{L07} to R^{L16} which are attached to adjoining carbon atoms may bond together directly to form a double bond,

k is 0 or 1,

x_3 , a, b, c and d represent a molar compositional ratio of the recurring units associated therewith, satisfying $x_3+a+b+c+d = 1$, ~~x_3~~ , a, b and c are numbers inclusive of 0, d is a number of more than 0, and x_3 is a number not equal to 0.

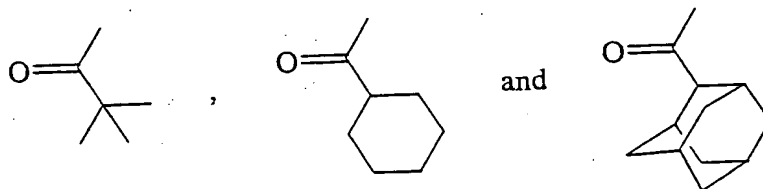
14. (Previously presented) A resist composition comprising the polymer of claim 13.

15. (Previously presented) A process for forming a resist pattern comprising the steps of:

applying the resist composition of claim 13 onto a substrate to form a coating,
heat treating the coating and then exposing it to high-energy radiation or electron beam through a photo mask, and
optionally heat treating the exposed coating and developing it with a developer.

16. (New) The polymer of claim 6, wherein in formula (1a),

R^3 is hydrogen or a straight, branched or cyclic, monovalent hydrocarbon group of 1 to 15 carbon atoms or a group selected from those of the following formulae:



; and

R^4 is hydrogen or a straight, branched or cyclic, monovalent hydrocarbon group of 1 to 15 carbon atoms which may contain a hetero atom, or

R^3 and R^4 may bond together to form a ring, wherein R^3 and R^4 together represent a straight, branched or cyclic, divalent hydrocarbon group of 1 to 15 carbon atoms which may contain a hetero atom.